

## CLAIMS

1. A process for production of an aromatic compound represented by formula (1) below:

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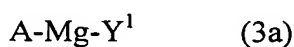
wherein, R is an optionally substituted hydrocarbon group or a C<sub>3</sub> - C<sub>10</sub> saturated or unsaturated ring group, which ring may optionally be intervened by an oxygen atom or a group represented by formula -N(B)- (wherein B is a hydrogen atom, an optionally substituted C<sub>1</sub> - C<sub>10</sub> hydrocarbon group or an optionally substituted C<sub>1</sub> - C<sub>10</sub> alkoxy carbonyl group) and may optionally be substituted; and A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aromatic group or an optionally substituted heteroaromatic group, which comprises reacting a compound represented by formula (2) below:

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wherein, R has the same significance as defined above, and X is a halogen atom or a sulfonic acid ester, with an aromatic magnesium reagent represented by formula (3a) below:

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wherein A has the same significance as defined above and Y<sup>1</sup> is bromine, iodine, chlorine or a carbanion ligand, in the presence of an iron catalyst and a diamine compound.

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2. The process for production of an aromatic compound according to claim 1, wherein the iron catalyst is an iron salt or an iron complex.

3. The process for production of an aromatic compound according to claim 1 or 2, wherein the diamine compound is a bidentate ligand.

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4. The process for production of an aromatic compound according to any one of claims 1 to 3, wherein R is an optionally substituted primary alkyl group or an optionally substituted secondary alkyl group.

5. The process for production of an aromatic compound according to any one of claims 1 to 4, wherein A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aryl group.

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6. A process for production of an aromatic compound represented by formula (1) below:



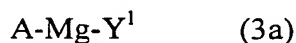
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wherein, R is an optionally substituted hydrocarbon group or a C<sub>3</sub> - C<sub>10</sub> saturated or unsaturated ring group, which ring may optionally be intervened by an oxygen atom or a group represented by formula -N(B)- (wherein B is a hydrogen atom, an optionally substituted C<sub>1</sub> - C<sub>10</sub> hydrocarbon group or an optionally substituted C<sub>1</sub> - C<sub>10</sub> alkoxy carbonyl group) and may optionally be substituted; and A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aromatic group or an optionally substituted heteroaromatic group, which comprises:

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a step of reacting an aromatic magnesium reagent represented by formula (3a) below:

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wherein A has the same significance as defined above and Y<sup>1</sup> is bromine, iodine, chlorine or a carbanion ligand, with a zinc compound represented by formula (4b) below:

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wherein each of Z<sup>3</sup> and Z<sup>4</sup>, which may be the same or different, independently represents bromine, iodine, chlorine, fluorine or a trifluoromethanesulfonyl group, in the presence of a diamine compound to give the reaction mixture; and

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a step of reacting the reaction mixture with a compound represented by formula (2) below:

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wherein R has the same significance as defined above and X is a halogen atom or a sulfonic acid ester, in the presence of an iron catalyst.

7. The process for production of an aromatic compound according to claim 6, wherein the iron catalyst is an iron salt or an iron complex.

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8. The process for production of an aromatic compound according to claim 6 or 7, wherein the diamine compound is a bidentate ligand.

9. The process for production of an aromatic compound according to any one of claims 6 to 8, wherein R is an optionally substituted primary alkyl group or an optionally substituted secondary alkyl group.

10. The process for production of an aromatic compound according to any one of claims 6 to 9, wherein A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aryl group.

11. A process for production of an aromatic compound represented by formula (1) below:

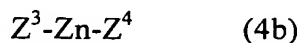


wherein, R is an optionally substituted hydrocarbon group or a C<sub>3</sub> - C<sub>10</sub> saturated or unsaturated ring group, which ring may optionally be intervened by an oxygen atom or a group represented by formula -N(B)- (wherein B is a hydrogen atom, an optionally substituted C<sub>1</sub> - C<sub>10</sub> hydrocarbon group or an optionally substituted C<sub>1</sub> - C<sub>10</sub> alkoxycarbonyl group) and may optionally be substituted; and A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aromatic group or an optionally substituted heteroaromatic group, which comprises:

a step of reacting an aromatic lithium reagent represented by formula (3c) below:



wherein A has the same significance as defined above, with a zinc compound represented by formula (4b) below:



wherein each of Z<sup>3</sup> and Z<sup>4</sup>, which may be the same or different, independently represents bromine, iodine or chlorine, in the presence of a diamine compound and then reacting with a Lewis acid metal compound containing at least one metal selected from magnesium, titanium, zirconium, hafnium, gallium and aluminum to give the reaction mixture, and

a step of reacting the reaction mixture with a compound represented by

formula (2) below:



5 wherein R has the same significance as defined above and X is a halogen atom or a sulfonic acid ester, in the presence of an iron catalyst.

12. The process for production of an aromatic compound according to claim 11, wherein the iron catalyst is an iron salt or an iron complex.

10 13. The process for production of an aromatic compound according to claim 11 or 12, wherein the diamine compound is a bidentate ligand.

14. The process for production of an aromatic compound according to any one of claims 11 to 13, wherein R is an optionally substituted primary alkyl group or an optionally substituted secondary alkyl group.

15 15. The process for production of an aromatic compound according to any one of claims 11 to 14, wherein A is an optionally substituted C<sub>4</sub> - C<sub>20</sub> aryl group.

16. The process for production of an aromatic compound according to any one of claims 11 to 15, wherein the Lewis acid metal compound is a metal compound represented by formula (4c) below:



wherein M is magnesium, titanium, zirconium, hafnium, gallium or aluminum; each of Z<sup>1</sup>, which may be the same or different, independently represents bromine, iodine, chlorine or a carbanion ligand; and n is an integer of 2 to 4.

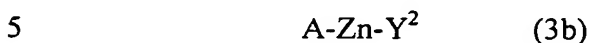
25 17. A process for production of an aromatic compound represented by formula (1) below:



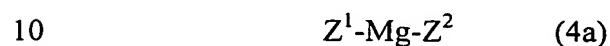
30 wherein, R is an optionally substituted hydrocarbon group or a C<sub>3</sub> - C<sub>10</sub> saturated or unsaturated ring group, which ring may optionally be intervened by an oxygen atom or a group represented by formula -N(B)- (wherein B is a hydrogen atom, an optionally substituted C<sub>1</sub> - C<sub>10</sub> hydrocarbon group or an optionally substituted C<sub>1</sub> - C<sub>10</sub> alkoxycarbonyl group) and may optionally be substituted; and A is an optionally  
35 substituted C<sub>4</sub> - C<sub>20</sub> aromatic group or an optionally substituted heteroaromatic

group, which comprises:

a step of reacting an aromatic zinc reagent represented by formula (3b) below:



wherein A has the same significance as defined above and  $\text{Y}^2$  is bromine, iodine or chlorine, with a magnesium compound represented by formula (4a) below:



wherein  $\text{Z}^1$  is a carbanion ligand and  $\text{Z}^2$  is bromine, iodine or chlorine, in the presence of a diamine compound to give the reaction mixture; and

a step of reacting the reaction mixture with a compound represented by  
15 formula (2) below:



wherein R has the same significance as defined above and X is a halogen atom or a  
20 sulfonic acid ester, in the presence of an iron catalyst.

18. The process for production of an aromatic compound according to claim 17, wherein the iron catalyst is an iron salt or an iron complex.

19. The process for production of an aromatic compound according to claim 17 or 18, wherein the diamine compound is a bidentate ligand.

25 20. The process for production of an aromatic compound according to any one of claims 17 to 19, wherein R is an optionally substituted primary alkyl group or an optionally substituted secondary alkyl group.

21. The process for production of an aromatic compound according to any one of claims 17 to 20, wherein A is an optionally substituted  $\text{C}_4 - \text{C}_{20}$  aryl group.